National Park Service
U.S. Department of the Interior

Social Science Program

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Programmatic Approval for NPS-Sponsored Public Surveys

Submission Date: 4-26-2013

1. **Project Title:** Yosemite Trail Safety Study

2. **Abstract:** *This study will generate data that could be used to reduce the most common cause of fatal injury at Yosemite National Park: drowning. At two sites on the Mist Trail that have been associated with past drownings, study surrogates will observe hikers who leave the trail and approach the Merced River edge. Research associates will note contextual (e.g., time of day, weather) and individual (e.g., gender, activity) characteristics that are associated with this risk behavior. After observed individuals return to the trail, they will be approached and asked to complete a very brief survey. It is expected that completed surveys will be collected from approximately 1050 adults between April and September of 2013. In addition to demographic data, the questionnaire will assess trail familiarity, motivation for risk behavior, risk perceptions and suggestions for reducing risk behavior in the future.*

3. **Principal Investigator Contact Information**

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4. **Park or Program Liaison Contact Information**

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Project Information

5. **Park(s) For Which Research is to be Conducted:** Yosemite National Park

6. **Survey Dates:** April 2013 TO September 2013

7. **Type of Information Collection Instrument (Check ALL that Apply)**

Mail-Back Questionnaire	☑ On-Site Questionnaire	Face-to-Face Interview	Telephone Survey	Focus Groups
Other (explain)				

8. **Survey Justification: (Use as much space as needed; if necessary include additional explanation on a separate page)**

Social science research in support of park planning and management is mandated in the NPS Management Policies 2006 (Section 8.11.1, "Social Science Studies"). The NPS pursues a policy that facilitates social science studies in support of the NPS mission to protect resources and enhance the enjoyment of present and future generations (National Park Service Act of 1916, 38 Stat 535, 16 USC 1, et seq.). NPS policy mandates that social science research will be used to provide an understanding of park visitors, the non-visiting public, gateway communities and regions, and human interactions with park resources. Such studies are needed to provide a scientific basis for park planning, development.

From 2005-2011, Yosemite National Park (YOSE) reported the second highest number of unintentional visitor fatalities (n=12) among all visitors to National Parks nationwide; the second highest number of serious injuries among all parks; and accounted for more than 12% of all Search and Rescue costs paid out by the National Park Service. The most common cause of injury resulting in death at YOSE was drowning and the most common activity associated with an injury was hiking.

The National Park Service has requested a survey of visitors to:

- Document the number and type of visitors who are leaving the trail at and getting too close to the Merced River.
- Understand patterns that are associated with increases in this risk behavior
- Document the reasons that visitors cite for leaving the trail at locations perceived hazardous locations
- Explore alternatives to the risk behavior that might appeal to visitors who are currently engaging in it

The Preventive Search and Rescue staff at YOSE are currently developing a strategic plan for Risk Management, and have requested this information so that their plan can be data driven. The information produced by this data collection effort is also highly responsive to numerous recommendations that have been included in prior (internal) reviews of visitor fatalities at YOSE. Some examples are listed below:

Recommendation	Survey/Study Relevance
Risk management plan and signage should address the park's diverse visitor population	Survey will reveal whether different groups perceive risk differently, and what visitor subgroups are most likely to engage in this risk behavior.
Identify appropriate channels for delivering safety education messages	Survey will reveal where visitors who engage in risk behavior sought information prior to their hike.
Evaluate current signage to determine if it adequately addresses hazards/communicates risk	Study would determine how often people leave the trail and at what locations, as well as whether they associate risk with their behavior. [Other communication gaps may also become apparent, such as hikers not realizing there is no potable water on the trail above the Vernal Fall Footbridge.]
Explore posting personnel at the top of Vernal Fall	Study would ascertain when the risk behavior is more likely to occur, which would help managers determine optimal staffing schedules.
Consider extending existing structures/barricades, to discourage access to the water in high hazard areas	Size of problem would be identified, and the specific places where access is being gained would be revealed. This could point to sites where engineering improvements would yield the highest return, in terms of risk reduction. [The need for other trail improvements (e.g., such as more water stations) may also emerge.]

The National Park Service's Risk Management Program is also interested in the results of this study. They see it as part of an agency-wide effort to collect data regarding the attitudes, beliefs and perceptions of visitors as they relate to safety. They also plan to use this study's methodology to guide future data collection efforts in other parks with similar safety concerns and risk issues.

9. **Survey Methodology: (Use as much space as needed; if necessary include additional explanation on a separate page)**

(a) Respondent Universe:

The respondent universe for this collection will be all visitors (18 years and older) observed leaving the Mist Trail and returning from designated risk areas.

(b) Sampling Plan/Procedures:

Two research assistants will observe two sections of the trail selected by the Park's Preventive Search and Rescue director. These sections of the trails will be selected because they are associated with unsafe exposure to visitors. The research assistants are not NPS employees and will not be wearing an NPS uniform. Visitors observed exiting one of the designated sites areas will be approach and asked to complete a 4 minute survey.

One trail observer will use a counting device to record the number of all trail users and the second will record the number of trail users observed leaving the trail at locations that are considered potentially hazardous.

(c) Instrument Administration:

Here is the script that will be used when potential subjects are approached:

> "*Hi. Would you be willing to fill out a four minute survey as part of a study that we are carrying out for the Park Service and the Uniformed Services University? We will not ask for your name or any contact information. The study is voluntary.*"
>
> If a potential subject asks whether they were approached because they had entered the area by the river, the research assistant will reply honestly: *"Yes, we are interested in learning more about hikers who go there. We will not ask for your name, but would appreciate hearing from you."*
>
> If visitor agrees: *"Thanks a lot" (and the form is provided, with a pen & clipboard).*
>
> If visitor declines: *"Okay, well thanks anyway. Enjoy the rest of your hike."*

If the research assistant is unsure whether a hiker is ≥ 18, he will ask them their age. If hikers do not speak English, no attempt will be made to recruit them to complete the survey, however, they will be recorded and counted as non-respondents.

(d) **Expected Response Rate/Confidence Levels**

We will contact 1,500 individuals stratified by weekend and weekday periods and expect 1,050, or 70 percent, to agree to respond. We believe this response rate is realistic based upon the response rate for surveys undertaken by this study team and based on generally high response rates for surveys undertaken in National Parks and other protected areas. With these anticipated sample sizes, we will be 96 percent confident that the true proportion in the population is +/- 2 percentage points of the sample statistic. A confidence interval of five percentage points is a standard level of precision for social science surveys of this type.

Number of Initial Contacts	Expected Response Rate	Expected Number of Responses	Margin of Error +/- %
1,500	70%	1,050	2%

(e) Strategies for dealing with potential non-response bias:

We will collect observational data on people who enter risk areas (i.e., their genders, what they do there, whether they are alone or in a group etc.). These numbers be used to gauge whether a particular subset of potential subjects are more likely to decline survey participation. We can take any such factors into account when interpreting our survey data.

(f) Description of any pre-testing and peer review of the methods and/or

instrument (recommended):

Earlier drafts of the data collection instrument were reviewed by several members of the NPS Social Science staff, including two who are based at Yosemite National Park. They have also been reviewed by the Search and Rescue staff of Yosemite, as well as the Acting Chief of the Office of Risk Management in the National Park Service's Headquarters in Washington, DC.

To estimate how long it will take subjects to complete this survey instrument, it was administered to a small group of adults (n=<9). They were asked to complete the questionnaire as they would if they had been asked to carry out this task on a hiking trail. The mean survey completion time for this sample was 3.94 minutes. Therefore, for the calculations in the next section, a completion time of 4 minutes was used.

10 **Burden Estimates:** We plan to approach approximately 1,500 individuals during the sampling period (34 days between April 2013 and September 2013). With an anticipated response rate of 70%, we expect to receive 1,050 total responses for this collection.

We expect that the initial contact time will be at least one minute per person (1,500 x 1 minute = 25 hours). We expect that 450 (30%) visitors will refuse to participate during the initial on-site contact. We will use observational data for those individuals (based upon our direct observation of risk behaviors) as the non-response bias check.

For those who agree to participate (n= 1,050) we expect that 1050 will complete and return the survey. This study has no follow up component. The burden for this data collection is estimated to be 95 hours (see below).

Estimated Number of Contacts	
Initial Contacts	1,500
Responses (Spring and Summer – combined)	1,050

Estimation of Time (mins.)	
To Complete Initial Contact	1
To complete and return surveys	4

Estimation of Respondent Burden (hours)	
Estimated Burden	25
Estimated Burden	70
Total Burden	95

11. **Reporting Plan:** The survey data will be analyzed and a completion report will be submitted to Yosemite National Park Managers as well as the NPS Office of Risk Management. Response frequencies will be tabulated and measures of central tendency computed (e.g., mean, median, mode, as appropriate). The report will be archived with the NPS Social Science Program for inclusion in the Social Science Studies Collection as required by the NSP Programmatic Approval Process.

The final results will be presented to scientific audiences of injury control and public health professionals at conferences or peer reviewed articles.